REMARKS

Reconsideration of the application is respectfully requested. By this amendment, claims 41-58 have been added, so that claims 1 and 41-58 are pending. Support for the new claims can be found in the original disclosure in at least the following exemplary locations.

Claims	Cite to Original Disclosure
41-43	claims 2-4, respectively
44-46	page 27 lines 1-14, especially lines 4-5
47	claim 8
48-51	claims 10-13, respectively
52	claim 15
53-55	claims 18-20, respectively
56-57	page 31 line 4 to page 37 line 34
58	pages 36-37

No new matter has been added by any of the amendments.

II. Rejection Under 35 USC §102(b)

Claim 1 was rejected as allegedly being anticipated by Fadler (US Patent No. 4,038,151). The Examiner noted that this particular rejection was not addressed in detail in the Amendment dated November 2, 2001. The undersigned regrets this omission. In addition, the Examiner indicated that this rejection was founded on the grounds that (1) claim 1 "is drawn to a device and what the device is used for does not impart any criticality on the invention, and (2) "a polynucleotide sequence is also considered an analyte" (Office action at middle of page 3). The rejection is respectfully traversed in light of the following remarks.

The presently claimed invention is directed to a device for detecting or quantitating one or more of a plurality of different polynucleotide sequences in a liquid sample, the device comprising a substrate defining a sample-distribution network having (i) a sample inlet, (ii) two or more detection chambers, and (iii) channel means providing a dead-end fluid connection between each of said chambers and said inlet, wherein at least two of said detection chambers each contain a different, sequence-specific polynucleotide binding polymer for detecting or

quantitating different polynucleotide sequences that may be present in such sample, to produce a detectable signal, wherein said substrate comprises two or more laminated layers.

Heretofore, there has been much interest in developing devices and techniques for detecting polynucleotide sequences, e.g., for genotyping and the like. Since the development of the polymerase chain reaction (PCR) by Cetus, Inc., in the mid-80's, numerous PCR-based techniques have been disclosed for detecting polynucleotide sequences. However, one difficulty associated with previous techniques has been the lack of methodologies convenient for processing small sample volumes (e.g., sub-microliter volumes) while maintaining high sensitivity and specificity, particularly for PCR amplification. In particular, the need to cycle samples between high and low temperature extremes (e.g., between about 40°C and 95°C and the attendant risk of sample cross-contamination of sample reagents have significantly constrained the nature of PCR-based detection methods prior to the present invention.

Surprisingly, the applicants have discovered that the present invention is highly efficient at allowing simultaneous detection of different polynucleotide sequences in a sample, and particularly for detecting multiple, different target sequences in a sample using multiple wells that contain target-specific amplification primers despite multiple cycles of PCR amplification with temperatures ranging from about 50°C to about 95°C.

Fadler teaches a devices for detecting selected types of microorganisms, namely, bacteria and fungi. The wells in the device each contain a selected growth medium to specifically promote the growth of a microorganism of interest. Microorganisms that are viable in the selected media are then detected on the basis of increased optical opacity. Fadler fails to teach or suggest a device having multiple wells which are in fluid communication with a sample inlet, wherein the wells contain polynucleotide sequence-specific reagents for detecting different target sequences simultaneously in the same sample.

To anticipate a claimed invention, a cited reference must show each and every element of the claim. *Verdegaal Brothers Inc. v. Union Oil Co. of California*, 2 USPQ2d 1051 (Fed.Cir 1987). In the present case, Fadler, among other things, does not show a device in accordance with the present invention, wherein at least two detection chambers each contain a different, sequence-specific polynucleotide binding polymer for detecting or quantitating different polynucleotide sequences that may be present in the sample. Instead, Fadler teaches chambers

that contain different growth media. Accordingly, claim 1 and its dependent claims are not anticipated.

Nor would the claimed invention have been obvious. The consistent criterion for determining obviousness, under 35 USC 103 is whether the prior art would have suggested to one skilled in the art that the claimed invention should be carried out and would have a reasonable likelihood of success (e.g., Burlington Industries v. Quigg, 822 F.2d 1581, 3 USPQ2d 1436 (Fed. Cir. 1987; In re Hedges 783 F.2d 1038, 228 USPQ 685 (Fed. Cir. 1986). Both the suggestion and the expectation of success must be founded in the prior art, not in the applicant's disclosure. In re Dow Chemical, 837 F.2d 469, 5 USPQ2d 1529 (Fed. Cir. 1988).

In the present case, the Examiner has failed to point to any teaching in the cited art that would reasonably have suggested to one of ordinary skill in the art that the present invention should be made. Fadler teaches a device for detection of selected microorganisms using wells containing selected culture media components. There is no teaching or suggestion in this reference of modifying the device of Fadler to detect specific polynucleotides in a sample. Rather, Fadler is concerned only with the detection of microbial organisms using viability-selecting growth media.

Moreover, the applicants submit that the passage of over 20 years since the filing date of Fadler (July 26, 1976) is further evidence that the skilled person in the art would not have turned to Fadler to prepare a device for polynucleotide detection in accordance with the present invention.

In summary, it is submitted that absent improper hindsight, a person of ordinary skill in the art would not have arrived at the claimed invention. Accordingly, withdrawal of the rejection is respectfully requested.

III. Rejection Under 35 USC §112, Second Paragraph

Claim 1 was rejected as allegedly being indefinite on account of the phrase "sequence-specific polynucleotide". The rejection is respectfully traversed.

The applicants submit that the skilled person would have no difficulty in understanding the metes and bounds of this phrase in light of the teachings of the specification in the light of the knowledge of one of ordinary skill in the art, which is all that is required for definiteness. For example, ample guidance regarding detection of polynucleotides is provided in the specification at pages 31 to 37, which enumerates several exemplary assay formats for which sequence-specific polynucleotides can readily be devised using knowledge commonly available

in the art. Based on these teachings in combination with knowledge of the art, the skilled person would understand how to design sequence-specific polynucleotides to render the device operative. Accordingly, withdrawal of this rejection is respectfully requested.

IV. Conclusion

Applicant believes that the application is in condition for allowance. A Notice of Allowance is therefore respectfully requested.

FEE AUTHORIZATION AND REQUEST FOR TIME EXTENSION

A Request for Continued Prosecution and Petition for 3-Month Extension of Time are enclosed herewith. If any additional time extensions are required for timely filing of this response, such time extension is hereby requested. If any additional fees not submitted with this response are required, please take such fees from Applied Biosystems Deposit Account No. **01-2213 (Order No. 4291c3)**.

Respectfully submitted,

Date: Dec. 2, 2002

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